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Patent Search

Invention Title	IOT ENABLED SMART CHARGING AND BATTERY MANAGEMENT FOR ELECTRIC VEHICLE
Publication Number	48/2024
Publication Date	29/11/2024
Publication Type	INA
Application Number	202441089342
Application Filing Date	18/11/2024
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRICAL
Classification (IPC)	B60L0055000000, H02J0007000000, B60L0053660000, H02J0003320000, B60L0053630000

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Abstract:

ABSTRACT: IoT-enabled smart charging and battery management systems are transforming the electric vehicle (EV) ecosystem by enabling more efficient, sustainable friendly charging solutions. Through real-time data monitoring, predictive analytics, and dynamic load management, IoT enhances charging flexibility, optimizes energ supports grid stability. Key features include adaptive charging schedules based on electricity prices, remote monitoring and control, and integration with renewable e sources. Additionally, IoT-driven battery management systems monitor critical parameters like state of charge, temperature, and health, enabling predictive maintena extending battery lifespan. Vehicle-to-Grid (V2G) capabilities further allow EVs to act as distributed energy resources, supplying power back to the grid during peak de fleet operators, IoT-enabled systems provide centralized monitoring, reducing operational costs and enhancing scalability. By optimizing EV energy use and battery he enabled smart charging systems support a more sustainable and resilient energy future. Keywords:IoT-enabled smart charging, Electric vehicles (EV), Battery manage , Dynamic load management, Real-time data monitoring, Predictive analytics, Renewable energy integration, Vehicle-to-Grid (V2G), Remote monitoring and control

Complete Specification

Description:IoT-Enabled Smart Charging and Battery Management System for Electric Vehicles (EVs)

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Objective:

To design and implement an IoT-based system that optimizes charging, monitors battery performance, and ensures safe and efficient operation of electric vehicles, contributing to sustainability and improved user experience.

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Proposed method:

The proposed method involves developing an IoT-enabled smart charging and battery management system for electric vehicles (EVs) that optimizes charging, monit battery health, and enhances safety. The system integrates smart sensors, microcontrollers, and cloud-based platforms to enable real-time tracking of battery para such as State of Charge (SoC), temperature, and voltage. Using predictive analytics, the system estimates battery degradation and lifespan, allowing proactive maint It incorporates adaptive energy management to schedule charging based on grid conditions, electricity tariffs, and user preferences, with options for renewable ene integration. Users can monitor and control charging remotely via mobile or web applications, receiving notifications for anomalies or charging completion. By ensur efficient energy use, extending battery life, and enhancing user convenience, this method aims to make EV charging safer, smarter, and more sustainable.

Description:

This project focuses on integrating Internet of Things (IoT) technology with electric vehicle (EV) charging and battery management systems. The aim is to enhance th

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Department of Industrial Policy and Promotion
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